

Preliminary Amendment
National Stage Entry of PCT/JP2003/015260
Q88016
2

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (original): A separation apparatus, including:

a substrate;

a channel provided in said substrate and for flowing sample in said channel;

a separating portion provided in said channel and for separating a specific substance in said sample; and

a fine channel provided in said separating portion and having a width that is smaller than that of said channel,

wherein a layer of an adsorptive substance is formed in said separating portion, said adsorptive substance selectively adsorbing or binding to said specific substance.

2. (original): A separation apparatus, including:

a substrate;

a channel provided in said substrate and for flowing sample in said channel;

a separating portion provided in said channel and for separating a specific substance in said sample; and

a protruding portion provided in said separating portion,

wherein a layer of an adsorptive substance is formed in said separating portion, said adsorptive substance selectively adsorbing or binding to said specific substance.

3. (original): The separation apparatus according to claim 1 or 2, wherein electrodes are provided in said separating portion and said channel, and said separation apparatus further comprises an electrical voltage applying unit that provides electrical voltage between said electrodes.

4. (currently amended): The separation apparatus according to any one of claims 1 or 2 ~~to 3~~, wherein a protruding portion is provided in said separating portion, and an electrode is formed in said protruding portion.

5. (currently amended): The separation apparatus according to any one of claims 1 or 2 ~~to 4~~, wherein a combination of said specific substance and said adsorptive substance is any one of: an antigen and an antibody; an enzyme and a substrate; an enzyme and a substrate derivative; an enzyme and an inhibitor; a sugar and a lectin; a DNA and a RNA; a DNA and an RNA; a protein and a nucleic acid; a metal and a protein and a ligand and a receptor.

6. (currently amended): The separation apparatus according to any one of claims 1 or 2 ~~to 5~~, wherein said adsorptive substance is provided through a spacer on the surface of said substrate.

7. (original): A separation method, comprising:

in a separating portion of a separation apparatus including a channel provided in a substrate, a separating portion provided in said channel and a fine channel provided in said separating portion and having a width that is smaller than that of said channel,
introducing a liquid containing an adsorptive substance into said channel while applying an electrical voltage of different polarity than that of said adsorptive substance to said

Preliminary Amendment

National Stage Entry of PCT/JP2003/015260

Q88016

4

separating portion to cause an adsorption onto said separating portion, said adsorptive substance being capable of selectively adsorbing or binding to a separating target substance;

introducing a sample containing said separating target substance into said channel to cause a selective adsorption or binding to said adsorptive substance; and

introducing an eluting solution into said channel to elute and recover said separating target substance, said eluting solution being capable of causing an elution of said separating target substance from said adsorptive substance.

8. (original): A separation method, comprising:

in a separating portion of a separation apparatus including a channel provided in a substrate, a separating portion provided in said channel and a protruding portion provided in said separating portion, introducing a liquid containing an adsorptive substance into said channel while applying an electrical voltage of different polarity than that of said adsorptive substance to said separating portion of said separating apparatus to cause an adsorption onto said separating portion, said adsorptive substance being capable of selectively adsorbing or binding to a separating target substance;

introducing a sample containing said separating target substance into said channel to cause a selective adsorption or binding to said adsorptive substance; and

introducing an eluting solution into said channel to elute and recover said separating target substance, said eluting solution being capable of causing an elution of said separating target substance from said adsorptive substance.

9. (currently amended): A mass spectrometry system, comprising:

a separating unit that separates a biological sample according to molecular size or a property of the biological sample;

a pretreatment unit that conducts a pretreatment including an enzymatic digestion treatment of the sample separated by said separating unit;

a drying unit that dries the pretreated sample; and

a mass spectrometry unit that achieves a mass spectrometry of the sample after drying,

wherein said separating unit contains the separation apparatus according to any one of

| claim 1 or 2 to claim 6.